



**MARSHALL SPACE  
FLIGHT CENTER**  
HUNTSVILLE, AL

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# **NASA Principal Center for Review of Clean Air Act Regulations**

NASA/MSFC  
ED36/ Marceia Clark-Ingram  
September 17, 2002



# Regulatory Background

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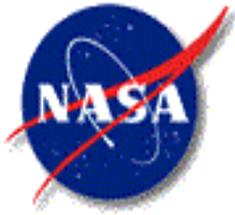
- Clean Air Act (CAA) regulations have greatly impacted materials/ processes utilized in manufacture of aerospace hardware
  - Title I : Volatile Organic Compounds (coating applications)
  - Title III : Hazardous Air Pollutants (depainting operations)
  - Title VI : Ozone Depleting Chemicals (solvents, blowing agents)
- ***Code JE/ NASA's Environmental Management Office at Headquarters*** recognized the need for a formal, Agency-wide, review process of CAA regulations.



# CAA Principal Center Concept

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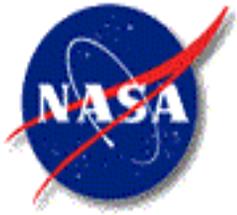
- Code JE developed the concept of a NASA Principal Center for the Review of Clean Air Act Regulations .
- The CAA Principal Center is tasked to
  - Provide centralized support to NASA/HDQ Code JE for the management and leadership of NASA s CAA regulation review process.
  - Identify potential impact from proposed CAA regulations to NASA program hardware and supporting facilities
    - The EPA is required by CAA to promulgate emission standards for approximately 188 HAPs.
    - Several National Emission Standards for Hazardous Air Pollutants (NESHAPs) potentially impact NASA facilities, programs and hardware.



# MSFC - CAA Principal Center

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- MSFC was selected as the Principal Center for Review of Clean Air Act Regulations
  - **Memorandum of Agreement (April 2000)**
- ED30/ Materials, Processes and Manufacturing Department at MSFC executes the Principal Center duties.
- MSFC has significant historical expertise in assessment and rule development of CAA regulations
  - Collaborative teaming with MSFC Space Shuttle Projects, MSFC's Environmental Management Office and ED30 on environmental regulatory issues
  - **Aerospace NESHAP, Critical Use Exemption for TCA, HCFC-141b waiver development**



# Principal Points of Contact

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- Code JE/ Environmental Management Office at NASA Headquarters
  - Ms. Olga Dominguez
  - Ms. Maria Bayon
- ED30/Materials, Processes & Manufacturing Department at MSFC
  - Dr. Paul M. Munafo
  - Mr. Dennis E. Griffin
  - Ms. Marceia Clark-Ingram
  - Ms. Rhonda Lash
- Earth Tech Corporation
  - Mr. Bill Swofford & Ms. Carole Frye



# NASA Centers

NASA Center	Location	NASA Center	Location
Ames (ARC)	Moffett, CA	Michoud (MAF)	New Orleans, LA
Dryden (DFRC)	Edwards AFB, CA	Marshall (MSFC)	Huntsville, AL
Glenn (GRC)	Cleveland, OH	Stennis (SSC)	Stennis, MS
Jet Propulsion (JPL)	Pasadena, CA	Wallops (WFF)	Wallops Facility, VA
Johnson (JSC)	Houston, TX	White Sands (WSTF)	Las Cruces, NM
Kennedy (KSC)	KSC, FL	Goddard (GSFC)	Greenbelt, MD
Langley(LaRC)	Hampton, VA		



## NASA's CAA Working Group

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- ¥ NASA's CAA WG is comprised of membership from all NASA Centers and Facilities
- ¥ Principal Center is dependant on CAA WG for identification of facility-oriented impacts from CAA regulations
- ¥ Routinely convenes via bi-monthly teleconferences
- ¥ NASA's CAA WG members had a Face-to-Face meeting during November 2001



# CAA WG Membership

NASA Center	Representative	NASA Center	Representative
ARC	<b>Dana Bolles</b>	GRC	<b>Christie Meyer</b>
DRFC	<b>Dan Morgan</b>	MAF	<b>Francis Celinos</b>
GSFC	<b>Kathleen Moxley</b>	MAF	<b>Melanie Jennings</b>
JPL	<b>James Pham</b>	MSFC	<b>Sharon Scroggins</b>
JSC	<b>Kirk Hummel</b>	MSFC	<b>Nathan Coffee</b>
KSC	<b>Denise De La Pasqua</b>	SSC	<b>Jeanette Gordon</b>
KSC	<b>Dan Rembert</b>	WFF	<b>Joel Mitchell</b>
LaRC	<b>Michelle Fraser</b>	WSTF	<b>Mike Zigmund</b>



# Shuttle Environmental Assurance Initiative

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- The Shuttle Environmental Assurance (SEA) initiative was formalized on August 28, 2000.
  - Develop/implement a Space Shuttle Program (SSP) environmental plan
  - Provide environmental insight into SSP operations
  - Assess emerging environmental regulations to identify areas of potential programmatic impact
  - Identify/assess materials issues potentially affecting SSP elements
  - Categorize identified issues according to risk levels & consolidate resource needs for SSP



# SEA Initiative

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- The Principal Center is very dependant upon the SEA for assessment of potential impacts to NASA s programmatic hardware & operations from CAA regulations
- The SEA is comprised of approximately 100 Steering Group & Working Group members
  - SSP elements
  - SSP support contractors
  - Safety Mission Assu.
  - Materials Orgs.
  - Procurement
  - Legal
  - Resources
  - Environmental Management Offices



# Shuttle Contractors

ELEMENT	SHUTTLE CONTRACTOR	LOCATION
External Tank	Lockheed Martin	New Orleans, LA
Redesigned Solid Rocket Motors	ATK Thiokol	Brigham City, Utah
Solid Rocket Boosters	United Space Alliance	KSC, FL
Space Shuttle Main Engine	Rocketdyne	Canoga Park, CA
Space Shuttle Vehicle	Boeing	Huntington Beach, CA
Space Suits	Hamilton Sunstrand	Connecticut



# SEA Points of Contact

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SEA Role	Point of Contact
Shuttle Integration Office (SIO), Manager	Ms. Jolene Martin
SIO Technical Team Lead	Mr. Alan Murphy
SEA Technical Lead	Mr. Steve Glover
SEA Regulatory Lead	Ms. Gail Grafton
SEA Interfaces Lead	Ms. Anne Meinhold



# Principal Center: Review Process

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1. EPA disseminates CAA regulatory action.
2. PC identifies regulatory action from Federal Register or NFESC subscription
3. PC performs cursory analysis of emerging, proposed or final regulation for potential impacts to NASA's programs and facilities.
  - Attend stakeholder meetings
  - Participate in teleconferences with DoD, Industry
4. PC develops/disseminates a Call for Comments on regulatory action to CAA WG and SEA.
  - PC develops a summary of the regulatory action
  - Timelines & potential areas of concern are communicated.



## Review Process (Cont d)

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6. PC consolidates all comments/concerns into a NASA-wide response
  - Draft copy of comments forwarded to all submitters for final review
7. Draft of comments provided to NASA HQ/ Environmental Management Office
  - Concurrence from Office of General Counsel
  - Concurrence from Director of Environment Management Division
8. Finalized comments are provided to EPA s docket .
  - Copies of comments provided to appropriate points of contact at NASA s facilities and for NASA s programs.



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# SUMMARY OF PRINCIPAL CENTERS CAA REGULATORY EFFORTS



# CAA REGULATORY EFFORT

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- NASA is tracking several Clean Air Act (CAA) regulations
  - Final
  - Proposed
  - Emerging
- 5 NASA Centers/Facilities are major sources of Hazardous Air Pollutants (HAPs)
  - KSC, MAF, MSFC, GRC, GSFC
  - Potential to emit 10 tons per year of 1 HAP or
  - Potential to emit 25 tons per year of any combination of HAPs



# REGULATORY TRACKING

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- FINAL
  - MACT Permit Hammer/ Application Part 1
- PROPOSED
  - Miscellaneous Coating Manufacturing
  - Semiconductor Manufacturing
  - Engine Test Cell/Standards
  - Fabric, Printing, Coating & Dyeing of Textiles
  - Site Remediation
  - Miscellaneous Metal Parts & Products
  - Proposed Settlement Accelerating the CAA Permit Hammer/Part 2
  - Protection of Stratospheric Ozone; Allowance System for Controlling HCFC Production, Import & Export



# REGULATORY TRACKING

## (Cont d)

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- Proposed (continued)
  - Friction Products
  - Reinforced Plastic Composites
- Emerging( not yet proposed)
  - Combustion Turbine
  - Industrial Commercial Boilers & Process Heaters
  - Plastic Parts & Products Surface Coating
  - Reciprocating Internal Combustion Engines
  - Paint Stripping



# NASA PROGRAMS & FACILITIES

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- The NASA CAA regulatory effort has illustrated several trends
  - The NASA Programs such as the Space Shuttle Projects (SSP) are impacted by emission standards regulating materials, processes and manufacturing operations
    - Miscellaneous Coating Manufacturing
    - Fabric, Printing, Coating and Dyeing of Textiles
  - The NASA Centers/Facilities primarily are impacted by the facility-oriented NESHAPs
    - Industrial Boilers
    - Combustion Turbines
    - Site Remediation
  - Some of the NASA Centers/Facilities engaged in Research & Development activities are seeking de minimus exemptions.



# Cross — Cutting Facilities

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- MAF's comments incorporate concerns with both facility and programmatic environmental impacts
  - MAF is a NASA facility
  - Location for manufacture of External Tank
- KSC's comments incorporate concerns with both facility and programmatic impacts
  - Shuttle processing
  - Integration of elements
  - Launch site



# CONCLUSION

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- The Principal Center concept has resulted in many benefits to NASA
  - Supports the Administrator's vision for **one** NASA
  - Provides unified NASA voice to the EPA
  - Teaming within NASA programs and facilities
  - Effective utilization of resources; decreased redundancy of efforts
  - Focused effort results in a more environmentally-friendly NASA